

Selected Instruments and Related Products: 2001

Issued September 2002

MA334B(01)-1

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SUMMARY OF FINDINGS

During 2001, the total value of shipments of selected instruments and related products totaled \$77.3 billion, down 2.9 percent from the revised 2000 value of \$79.6 billion. The 2001 figure includes automatic regulating, control, and solenoid valves, \$2.7 billion, down 4 percent from 2000; search, detection, navigation,

guidance, aeronautical, and nautical systems, instruments, and equipment, \$31.9 billion, an increase of 6.7 percent from 2000; laboratory apparatus and furniture, \$2.4 billion, up 15 percent from 2000; controls for monitoring residential and commercial environments, and appliance regulating controls, \$2.9 billion, down 12 percent from 2000; process control instruments, \$6.8 billion, down 7.5 percent; fluid meters and counting devices including motor vehicle instruments, \$4.4 billion, down 6 percent from 2000; the largest decrease came in test equipment and instruments to measure electricity, \$11.5 billion, a decrease of 23 percent from 2000; analytical and scientific instruments (except optical), \$7.5 billion, up 11 percent from 2000; optical instruments and lenses, \$2.8 billion, a decrease of 11.5 percent from 2000; test equipment, instruments, and measuring and controlling devices, not elsewhere classified (n.e.c.), \$4.5 billion, a decrease of 4.6 percent from 2000.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Chris Blackburn, 301-763-5167.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-457-4673.

U S C E N S U S B U R E A U

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Table 1. Value of Shipments of Selected Instruments and Related Products: 1995 to 2001
[Millions of dollars]

Product code	Product description	2001	2000	1999	1998	1997	1996	1995
332911F	Automatic regulating and control valves.....	2,210.3	2,299.4	2,347.2	2,081.9	2,097.2	1,892.6	1,860.4
332911H	Solenoid-operated valves (except nuclear and fluid power transfer).....	443.8	462.7	486.0	524.0	541.1	521.8	463.8
3345111	Aeronautical, nautical, and navigational instruments.....	2,846.8	2,729.5	2,799.8	2,503.9	2,531.0	2,274.3	2,124.5
3345113	Search and detection, navigation and guidance systems and equipment	29,063.1	r/ 27,165.3	24,597.7	26,030.5	26,584.1	26,093.9	24,697.4
3391110	Laboratory apparatus and laboratory furniture.....	2,388.4	r/ 2,077.8	1,782.1	1,843.3	1,887.5	1,799.3	1,836.9
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls.....	2,867.9	3,259.5	3,013.4	2,860.3	2,717.4	2,647.5	2,533.4
3345130	Process control instruments.....	6,765.9	7,311.3	6,825.4	6,637.0	7,073.1	6,745.1	6,438.5
3345141	Integrating and totalizing meters for gas and liquids.....	1,089.2	1,062.5	1,081.0	1,147.2	1,078.7	962.8	915.2
3345143	Counting devices.....	415.9	511.5	391.3	394.0	434.5	367.0	363.8
3345145	Motor vehicle instruments.....	2,900.0	3,111.0	2,851.3	2,435.8	2,245.1	2,218.8	2,193.1
3345151	Integrating instruments, electrical.....	531.2	493.2	472.9	460.3	457.3	458.0	445.0
3345153	Test equipment for testing electrical, radio and communication circuits, and motors.....	10,552.3	13,982.0	11,034.0	10,453.9	11,638.6	10,389.5	9,255.0
3345155	Instruments to measure electricity.....	391.3	439.7	365.0	376.6	455.9	499.8	554.9
3345160	Analytical and scientific instruments (except optical).....	7,547.6	r/ 6,808.2	7,581.2	6,162.4	6,058.6	5,478.4	5,737.2
3333141	Sighting, tracking, and fire control equipment, optical type.....	521.0	r/ 432.5	534.3	509.8	574.9	612.9	655.4
3333143	Optical Instruments and lenses.....	2,251.3	2,698.5	2,354.4	2,068.0	2,005.0	1,748.9	1,579.1
3345191	Aircraft engine instruments (except flight).....	889.3	r/ 818.7	657.9	656.9	520.6	529.7	429.7
3345193	Physical properties and kinematic testing equipment.....	1,660.4	r/ 1,845.3	1,736.4	1,728.1	1,522.8	1,368.9	1,374.4
3345195	Nuclear radiation detection and monitoring instruments.....	544.1	568.2	539.1	567.2	529.6	496.5	501.2
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	1,177.0	r/ 1,203.6	1,080.7	1,533.8	1,676.7	1,451.6	1,373.2
3345199	Surveying and drafting instruments	276.3	331.7	313.7	297.3	359.8	364.8	355.9

r/Revised by 5 percent or more from previously published data.

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001			2000				
			Quantity		Value	Quantity	Value			
332911F	Automatic valves (regulating and control type, except nuclear).....	132	(X)	b/	2,210,292	(X)		2,299,413		
	Automated control valves:									
	Pneumatic actuated.....	(NA)	(X)		664,141	(X)		662,124		
	Sliding stem valves.....	(NA)	(S)		372,307	(S)		369,461		
332911F001	Globe body.....	29	a/	200,675	a/	245,790	a/r/	186,574		
332911F003	All other types.....	24	(S)		126,517	(S)	r/	132,774		
	Rotary valves.....	(NA)	(S)		130,729	(S)		137,392		
332911F005	Ball.....	12	(S)	a/	57,364	(S)	a/	62,034		
332911F007	Butterfly	12		37,501		48,171	r/	41,525		
332911F009	All other rotary valves, including eccentric disk.....	13	b/	15,059	a/	25,194	b/	15,305		
332911F011	All other pneumatic power-operated control valves.....	16	(S)	a/	32,544	r/	94,589	r/	34,048	
332911F013	Parts for pneumatic-actuated valves sold separately.....	26	(X)		128,561	(X)	r/	121,223		
	All other actuation, including electric-actuated and electrohydraulic-actuated.....	(NA)	(X)		347,194	(X)	r/	363,267		
	Sliding stem valves.....	(NA)	(S)		58,534	(S)	r/	55,826		
332911F015	Globe body.....	9	b/	9,994	a/	5,797	(S)		5,008	
332911F017	All other types.....	13	(S)	a/	52,737	(S)	a/r/	50,818		
332911F022	Rotary valves, including ball, butterfly, and eccentric disk 1/ 2/.....	11	(S)		(D)	(S)		(D)		
332911F025	All other power-operated (except pneumatic) control valves 1/ 2/.....	18		4,419	a/	247,076	4,611	a/r/	263,646	
332911F027	Parts for all other power-operated (except pneumatic) control valves.....	12	(X)	c/	41,584	(X)		43,795		
332911F029	Valve actuators, sold separately.....	22	b/	118,268	a/	122,340	b/r/	119,804	a/r/	116,083
	Regulator valves:									
332911F031	Remote-sensing direct-actuated temperature regulators 1/.....	17	(S)		67,042	(S)		74,686		
332911F033	Self-contained direct-actuated pressure regulators (except instrument type and safety relief valves) 1/.....	33		4,354		241,817	4,842	r/	281,263	
332911F035	Pilot (internal and external)-actuated pressure regulators 1/.....	29	b/	289	b/	129,612	a/	278	a/	108,080
332911F037	Self-contained direct-acting precision and instrument-type pneumatic (air and gas) pressure regulators 1/.....	12	a/	385		38,268	a/	424		40,036
332911F039	Flow regulators for gas, vapors, or liquids 1/.....	40		20,003	a/	228,277	r/	22,696	r/	255,516
332911F041	Other regulator valves 1/.....	24	(X)	a/	277,814	(X)	a/	307,972		
332911F043	Parts for regulator valves, sold separately.....	37	(X)	a/	93,787	(X)	a/	90,386		
332911H	Solenoid-operated valves (except nuclear and fluid power transfer).....	42	(X)	a/	443,836	(X)	a/	462,654		
	Solenoid-operated valves (except power transfer valves):									
	Commercial/industrial types:									
332911H001	Two-way 1/	34		4,952		222,342	5,076		218,624	
332911H003	Three-way 1/.....	17		954		39,385	874		35,993	
332911H005	Other 1/ 3/.....	15	(D)		(D)	(D)		(D)		
332911H007	Household appliance type 1/ 3/.....	2		7,568		140,778	r/	13,408	r/	162,116
332911H009	Parts, components, and operators for solenoid-operated valves (except nuclear and fluid transfer valves, sold separately).....	17	(X)		41,331	(X)	r/	45,921		
3345111	Aeronautical, nautical, and navigational instruments (except aircraft engine instruments).....	73	(X)	a/	2,846,801	(X)	a/	2,729,459		
	Flight and navigation sensors, transmitters, and displays:									
3345111101	Compasses (all types).....	13	(X)	a/	418,413	(X)	a/	394,608		
3345111103	Altimeters (except radio and radar altimeters).....	8	(X)	b/	30,092	(X)	b/	23,752		
3345111105	Airspeed indicators, including machmeters and air data computers.....	15	(X)	a/	466,916	(X)		382,631		
3345111107	Acceleration indicators and systems components	9	c/	10,883		62,189	c/r/	10,051		86,201
3345111109	Rate-of-climb indicators 4/.....	3	(D)		(D)	(D)		(D)		
3345111111	Angle-of-attack indicators 4/.....	8		16,267		33,587	r/	13,834		32,311
3345111113	Artificial horizon flight instruments	6	c/	5,540	a/	14,125	c/	4,854	a/	12,380
3345111115	Other aerospace and navigational instruments.....	24	(X)		816,414	(X)		778,499		
	Gyroscopes, sold separately:									
3345111217	Vertical 5/.....	3	(S)		(D)	b/r/	607	b/	5,153	
3345111219	Directional 5/.....	7	(S)		46,566	(S)	r/	24,027		
3345111221	Free, torqued and untorqued 6/.....	2	(X)		(D)	(X)		(D)		
3345111223	Rate, inertial grade 6/.....	3	(X)		(D)	(X)	r/	(D)		
3345111225	Rate, noninertial grade 6/.....	5	(X)		113,530	(X)	r/	98,037		

Continued

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001			2000		
			Quantity		Value	Quantity		Value
3345111227	Airframe equipment instruments: Position indicators (mechanical, as for landing gear, cowl flaps, stabilizers, etc.).....	11	(X)		37,565	(X)		30,157
3345111229	Hydraulic system (both electrical and mechanical measuring means, as for liquid level and temperature and pressure indicators).....	12	(X)	a/	51,520	(X)	a/	40,285
3345111231	Cabin environmental measuring and control instruments (air-conditioning and heating, cabin pressure, oxygen, etc.).....	7	(X)		69,343	(X)	a/r/	72,597
3345111233	Other aerospace flight instruments.....	22	(X)		478,449	(X)	a/r/	555,543
3345111335	Nautical instruments (all types, including temperature, speed, pitch, and roll instruments and system components, etc.).....	9	c/	163,607	c/	51,478	c/	50,270
3345111437	Parts and components for aeronautical, nautical, and navigational instruments (except aircraft engine instruments, sold separately).....	24	(X)		156,614	(X)		143,008
33451113	Search and detection systems and navigation and guidance systems and equipment.....	178	(X)	b/	29,063,137	(X)	r/	27,165,332
3345113101	Light reconnaissance and surveillance electronic systems and equipment (infrared, ultraviolet, and visible light).....	30	(X)	b/	2,579,601	(X)	b/	2,038,379
3345113103	IFF equipment.....	12	(X)		287,662	(X)	r/	288,272
3345113105	Proximity fuses.....	3	(X)		(D)	(X)		(D)
	Radar systems and equipment:							
	Search, detection, and acquisition radar systems and equipment (BMEWS, airborne and other early warning radar, air traffic control radar, air defense and fighter control radar, ship radar, harbor control radar, meteorological radar, etc.):							
3345113207	Airborne and missile/space radar.....	20	(X)	a/	1,825,221	(X)	a/r/	2,115,111
3345113209	Ship (marine) radar 7/.....	12	(X)		(D)	(X)		(D)
3345113211	Ground radar 7/.....	20	(X)		1,562,553	(X)		1,476,226
	Tracking radar systems and equipment (fire control, bombing, bombing navigational radar, aircraft, and missile tracking radar, etc.):							
3345113313	Airborne and missile/space radar.....	9	(X)		(D)	(X)		(D)
3345113315	Ship (marine) radar.....	9	(X)		(D)	(X)		(D)
3345113317	Ground radar.....	14	(X)		522,725	(X)		483,335
	Instrumentation radar systems and equipment (altimeters, highway speed control radar, missile and space satellite tracking range radar, GCA and other precision approach radar, etc.):							
3345113319	Airborne, missile/space and ship (marine) radar.....	7	(X)	a/	80,496	(X)	r/	84,913
3345113321	Ground radar.....	7	(X)	c/	106,736	(X)	c/	58,666
3345113323	Electronic checkout, monitoring, evaluation, and other electronic support equipment for radar systems.....	12	(X)	a/	231,929	(X)	r/	184,524
	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone communication equipment, depth finding, fire control, fusing, guidance, hydrophones, mapping, sonabuys, navigation, sonar fish finders, sonar range instrumentation and other):							
3345113425	Surface ship applications (destroyers, destroyer escorts, etc.).....	20	(X)		372,193	(X)	a/	400,390
3345113427	Submarine applications.....	15	(X)		628,719	(X)	r/	653,495
3345113429	Airborne.....	10	(X)		223,676	(X)	r/	235,396
3345113431	Electronic checkout, monitoring, evaluation, and other electronic support equipment for sonar systems and submerged fixed systems.....	5	(X)		(D)	(X)		(D)
3345113433	Specialized command and control data processing and display equipment, sold separately from complete systems.....	17	(X)		678,527	(X)	r/	648,240
3345113435	Search, detection, identification, and tracking systems and equipment, n.e.c.	25	(X)		1,806,448	(X)	r/	1,379,805
	Electronic warfare systems and equipment:							
	Countermeasures equipment:							
3345113437	Jamming equipment, communications, and radar.....	16	(X)		1,268,424	(X)		1,225,834

Continued

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001			2000			
			Quantity		Value	Quantity		Value	
3345113439	Underwater countermeasures equipment	4	(X)		(D)	(X)		(D)	
3345113441	Other active countermeasures equipment, excluding passive materials such as chaff, window, needles, rope, etc.	12	(X)	a/	299,121	(X)	a/	218,940	
3345113443	Specialized electronic and communication intelligence equipment, including specially designed DF equipment, signal reduction and processing equipment, and signal analyzers and display equipment.....	21	(X)	a/	2,041,012	(X)	a/	1,982,647	
	Missile and space vehicle systems and equipment (beam riders, command guidance, inertial systems, infrared homing systems, radar systems, stellar trackers, television systems, combination systems, etc.):								
3345113545	Missile-borne and space-vehicle-borne equipment.....	29	(X)	a/	5,416,786	(X)	a/r/	3,708,851	
3345113547	Nonmissile and space vehicle guidance equipment (ground, ship, or airborne command guidance systems, etc.).....	15	(X)		573,115	(X)		514,057	
3345113549	Electronic checkout, launching, and other missile and space vehicle support systems (ground, ship, and air).....	18	(X)		514,509	(X)		534,639	
	Navigation systems and equipment, navigational aids for aircraft, ship, and ground navigation (autopilots, beacons, transponders, collision warning devices, DECCA, DME, ILS, Doppler navigation systems, inertial navigation systems, optical/laser LORAN, radio compasses and direction finders, SHORAN, TACAN, VOR, VORTAC equipment, etc.):								
	Airborne navigational systems:								
3345113651	Radio navigation receivers and displays, including OMNI, radio magnetic, glide slope/localizer, DME, etc.	19	(X)	c/	746,584	(X)	b/r/	789,398	
3345113653	Airborne integrated data systems/flight recorders.....	9	(X)		265,737	(X)	r/	265,865	
3345113655	Distance measuring equipment (DME) 8/.....	3	(X)		(D)	(X)		(D)	
3345113657	Flight directors/situation display 8/.....	6	(X)		(D)	(X)		(D)	
3345113659	Heads-up display (HUD) systems 8/.....	4	(X)		(D)	(X)		(D)	
3345113661	Inertial navigation systems.....	8	(X)		599,457	(X)		649,699	
3345113663	Proximity warning/collision avoidance equipment.....	5	(X)		396,230	(X)	r/	430,580	
3345113665	Complete automatic pilots.....	3	(X)		(D)	(X)		(D)	
3345113667	Other airborne navigational systems 8/.....	19	(X)	c/	2,078,087	(X)	c/r/	2,270,767	
3345113669	Surface (ship and ground) navigational systems.....	30	(X)	a/	331,192	(X)	r/	350,072	
3345113671	Underwater navigational systems.....	4	(X)		(D)	(X)		(D)	
3345113673	Electronic checkout, monitoring, evaluation, and other electronic support equipment for navigational systems and equipment.....	28	(X)	a/	759,039	(X)	r/	1,253,698	
33911110	Laboratory apparatus and laboratory furniture.....	143	(X)	a/	2,388,382	(X)	a/r/	2,077,807	
3391110112	Laboratory balances and scales.....	9	(S)		54,264	(S)		55,206	
3391110115	Laboratory furnaces and ovens.....	20	(X)	a/	35,034	(X)	r/	39,651	
3391110118	Laboratory centrifuges.....	14	30,127		119,030	b/r/	30,696	a/r/	110,959
3391110121	Laboratory distillation apparatus and rectifying apparatus 9/.....	5	(X)		(D)	(X)		(D)	
3391110123	Laboratory vacuum pumps 9/.....	2	(S)		7,869	(S)	r/	7,269	
3391110125	Laboratory sterilizers and autoclaves.....	13	(X)	a/	199,779	(X)	a/r/	175,488	
3391110127	Laboratory filtering or purifying apparatus 10/.....	3	(X)		(D)	(X)		(D)	
3391110129	Laboratory burners and hotplates.....	8	(X)	a/	8,315	(X)		9,000	
3391110131	Laboratory heat exchangers.....	-	(X)		-	(X)		-	
3391110133	Laboratory granulators, mills, and other particle size reduction apparatus.....	7	(X)		1,563	(X)		2,309	
3391110135	Laboratory drying and evaporation apparatus.....	12	(X)		36,400	(X)		31,661	
3391110137	Laboratory blenders, mixers, shakers, dispensers, fraction collectors, and other liquid sample preparation apparatus.....	26	(X)	a/	178,885	(X)	b/r/	174,327	
3391110139	Laboratory incubators.....	10	b/	33,500	61,455	a/r/	30,847		55,097
3391110141	Environmental test chambers.....	21	(S)	a/	154,614	(S)	a/r/	161,107	
3391110143	Laboratory freezers.....	9	b/	13,170	55,880	12,538		55,094	
3391110145	Microtomes 10/.....	2	(D)		(D)	(D)		(D)	
3391110231	Laboratory furniture, including cabinets, cases, benches, tables, stools, reagent shelves, etc. 11/.....	18	(X)		364,330	(X)	a/	310,110	
3391110233	Parts and components for laboratory furniture, sold separately 11/.....	4	(X)		(D)	(X)		(D)	

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001			2000		
			Quantity		Value	Quantity		Value
3391110151	All other laboratory apparatus, n.e.c. 10/.....	74	(X)	a/	966,964	(X)	r/	747,322
3391110155	Components, parts and accessories for laboratory and scientific apparatus, sold separately.....	49	(X)		144,000	(X)	r/	143,207
3345120	Controls for monitoring residential and commercial environments and appliance regulating controls.....	96	(X)	b/	2,867,932	(X)		3,259,485
	Automatic controls of the type principally used as components of air-conditioning, refrigeration, and comfort heating, including pneumatic controls:							
3345120102	Temperature responsive (thermostats) 1/.....	33	a/	46,821	a/	351,858	b/	52,325
3345120105	Pressure responsive (pressurestats) 1/.....	11		2,065	a/	19,423	a/	2,450
3345120107	Hydronic responsive 1/ 12/.....	6	(D)		(D)	(D)		(D)
3345120109	Humidity responsive (humidistats) 1/ 12/.....	6	(D)		(D)	(D)		(D)
3345120111	Light responsive 1/ 12/.....	2		8,215		95,616	r/	9,520
3345120113	Liquid level 1/.....	12	(S)	c/	43,683	(S)	c/	39,728
3345120115	Igniters 1/ 13/.....	8	(D)		(D)	(D)		(D)
3345120117	Inherent motor protectors 1/ 13/.....	5		101,774		362,314	b/	156,037
3345120219	Microprocessor-based load programmers for buildings energy control 1/.....	11	(S)	b/	73,707	(S)	b/	64,279
3345120221	Computerized energy control systems for buildings.....	10	(S)		578,891	(S)	a/	586,045
3345120223	Other.....	28	(X)		661,207	(X)		719,497
	Controls for major appliances such as domestic laundry and cooking appliances, refrigerators and freezers, vending machines, air-conditioners, etc.:							
3345120225	Temperature responsive 1/.....	15		101,803		270,097	r/	115,019
3345120227	All other controls for appliances 1/.....	14		55,689		266,588	(S)	a/r/
3345120229	Parts and components for controls monitoring residential and commercial environments and for appliance regulating controls, sold separately.....	24	(X)		144,548	(X)		161,490
3345130	Process control instruments.....	476	(X)	b/	6,765,890	(X)	a/	7,311,325
	General-purpose control system instruments (commonly called receiver-type), operating from standardized transmission signals (electrical types ac or dc milliampere, millivolt, or telemetering signals; pneumatic types, 3 to 15 and 3 to 27 p.s.i. signals):							
	Electronic systems--unified architecture type:							
3345130101	Controllers (recording, indicating, or blind).....	32	b/	149,817	b/	115,636	b/r/	164,497
3345130103	Recorders, with or without self-contained set-point stations.....	12	(S)	b/	103,392	(S)	b/r/	101,080
3345130105	Indicators, with or without self-contained set-point stations.....	22		88,589		19,688		98,169
3345130107	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, and integrators, etc.	7	(S)		111,963	(S)	r/	112,878
3345130109	Electronic systems--nonunified architecture type.....	58	(X)	b/	1,391,825	(X)	b/	1,492,408
3345130111	Industrial multifunction process computers.....	46	(X)		394,385	(X)	a/	485,232
	Pneumatic systems, including all system-type control, display and computing instruments actuated from standardized pneumatic transmission signals:							
3345130113	Controllers (recording, indicating, or blind) 14/.....	10	(S)	a/	52,076	(S)	a/	49,490
3345130116	Recorders and indicators, with or without self-contained set-point stations 14/.....	9	(D)		(D)	(D)		(D)
3345130119	Auxiliary stations and analog computing devices associated with the above, including manual loaders, auto-to-manual stations, ratio stations, adders, multipliers, and integrators, etc.	5	(S)	c/	7,667	(S)	c/r/	7,776
3345130121	Receiver-type gauges, analog and digital 14/.....	5	(S)		(D)	(S)		(D)
3345130123	Annunciators, industrial; electromechanical and solid-state types.....	7	a/	32,152	b/	19,747	a/	31,509
							b/	23,229

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001		2000			
			Quantity		Value		Quantity	Value
	Temperature measuring instruments, excluding general-purpose receiver-type instruments:							
	Electrical and electronic measuring types (thermocouple, resistance temperature detector, radiation, optical, thermistor, and other electrical sensors):							
3345130225	Direct-deflecting types (controllers for all types of electrical temperature sensors).....	6	(S)		11,922	(S)	r/	12,182
3345130227	Direct-deflecting types (indicators and recorders for all types of electrical temperature sensors).....	7	(S)	b/	3,523	(S)		5,058
3345130229	Electromechanical self-balancing types (electric or pneumatic controllers for all types of electrical temperature sensors) 15/.....	2	(D)		(D)	(D)		(D)
3345130231	Electromechanical self-balancing types (indicators, recorders, and integrators for all types of electrical temperature sensors) 15/.....	3	(S)		5,809	(S)		6,728
3345130233	Electronic controllers for all types of electrical temperature sensors.....	21	a/	420,927	a/	105,068	a/	459,879
3345130235	Digital indicators for all types of electrical temperature sensors, excluding data loggers.....	30	a/	55,907	b/	21,029	a/	71,304
	Transmitters, producing standardized electric or pneumatic analog transmission signals for all types of electrical temperature sensors:							
3345130237	Electric.....	18	a/	257,239	a/	64,689	a/r/	261,359
3345130239	Pneumatic.....	4	b/	283	c/	473	b/	352
	Mechanical measuring types, filled systems (liquid filled, vapor pressure, gas filled, and mercury filled types):							
3345130241	Indicating or recording controllers.....	7	(S)		12,964	(S)		14,370
3345130243	Recorders, noncontrol.....	10	(S)	b/	17,296	(S)	b/r/	15,498
3345130245	Indicators only, excluding indoor-outdoor and other household or appliance type thermometers.....	13		444,041	a/	11,037	515,436	a/r/
3345130247	Transmitters producing standardized electric or pneumatic analog transmission signals.....	10	a/	14,916	a/	6,648	b/r/	18,786
	Primary temperature sensors, excluding aircraft aircraft types:							
3345130249	Thermocouples and thermocouple lead wire.....	57	(X)		223,582	(X)		248,326
3345130251	All other types (resistance temperature detectors, radiation and optical sensors, thermistors, etc.).....	48	(X)	a/	164,357	(X)		166,056
	Pressure (gauge, absolute vacuum) and draft measuring instruments, excluding general-purpose receiver-type instruments:							
3345130253	Indicating or recording controllers.....	13	(S)	c/	48,005		807,438	c/
3345130255	Recorders, noncontrol.....	8	b/	12,252	b/	5,259	b/r/	10,317
	Indicators only, excluding receiver-type gauges:							
3345130257	3-inch diameter and over 1/.....	16		3,796	a/	89,466	3,696	r/
3345130259	Under 3-inch diameter 1/.....	13		27,006		82,144	28,397	
	Transmitters producing standardized analog transmission signals:							
3345130261	Transmitters producing standardized electronic analog transmission signals 1/ 16/.....	29		1,732		191,269	r/	3,914
3345130263	Transmitters producing standardized pneumatic analog transmission signals 16/.....	4	(D)		(D)		(D)	(D)
	Flow and liquid level measuring instruments, excluding general-purpose, receiver-type instruments:							
	Differential pressure types:							
3345130265	Indicating or recording controllers.....	10		170,533	a/	18,762	168,632	b/
3345130267	Recorders, noncontrol; and indicators, noncontrol.....	13		77,741		32,413	r/	69,071
	Transmitters producing standardized analog transmission signals:							
3345130269	Transmitters producing standardized electronic analog transmission signals.....	20		302,878		328,744	265,002	a/
3345130271	Transmitters producing standardized pneumatic analog transmission signals.....	9	c/	13,235	c/	7,190	c/	16,079
							c/	9,291

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001				2000			
			Quantity		Value		Quantity		Value	
3345130273	Primary pressure sensors (load cells, strain gauges, etc.).....	9		42,126		18,792		50,798		22,923
3345130275	Primary flow elements, including orifice plates, venturi tubes, flow tubes, flow nozzles, and pitot tubes, etc.	18		250,537		68,304		282,882		67,770
	Electromagnetic flowmeters:									
3345130277	Primary device (magnetic flow tube).....	12	b/	82,756	c/	99,101	b/	107,046	c/	106,450
3345130279	Secondary device (magnetic transmitter, recorder, indicator, or controller which receives signal directly from primary device).....	9	a/	36,628	a/	25,598	a/	42,933	a/	29,416
3345130281	Capacitance, ultrasonic, and other electronic types, including magnetic resonance, vortex-precession, and vortex-shedding type elements.....	36	b/	175,517	a/	166,613	a/	201,165	a/	160,887
3345130283	Variable area-controlling, recording, indicating, and transmitting instruments and associated primary flow elements 1/.....	14		(S)	c/	87,526		(S)		101,464
3345130285	Float and displacement (controlling, recording, indicating, and transmitting instruments and associated primary flow elements) 1/.....	25	a/	1,649		111,992	a/	1,708	r/	108,757
3345130287	Turbine and propeller: controlling, recording, indicating, and transmitting instruments and associated primary flow elements.....	12		89,686		38,983		98,360	r/	40,703
3345130289	Mass flow, i.e., controlling, thermal-controlling, recording indicating, and transmitting instruments and associated primary flow elements.....	18		(S)	a/	324,406		(S)		333,981
3345130291	Other types: controlling, recording, indicating, and transmitting instruments and associated primary flow elements.....	16		985,130		211,139	a/r/	718,901	r/	162,742
3345130293	Humidity instruments (controlling, recording, indicating, and transmitting, and associated primary humidity elements, excluding home and general-purpose type).....	12		(S)		34,611		(S)	r/	34,872
	Continuous process instruments for on-stream gas and liquid analysis, including, indicators, recorders, controllers, and analysis electrodes and cells; excluding laboratory analysis types:									
3345130295	Chromatographic analyzers.....	8	b/	5,436	b/	93,654	b/r/	3,999	b/r/	81,464
3345130297	Infrared analyzers.....	12	a/	11,513	c/	34,222	a/	11,377	c/	45,218
3345130299	Oxygen analyzers.....	16		36,527		68,340	b/	36,073		75,233
334513021A	Other gas analyzers.....	24		69,810		134,641	a/r/	63,269	r/	127,778
334513021C	Ph analyzers.....	13	a/	78,695	a/	41,389	a/	80,458	a/	42,425
334513021E	Other liquid analyzers.....	21	b/	125,149	a/	98,071	c/	105,831	a/r/	87,831
	Instruments for all process variables not listed above (speed, weight, position, sequence, density, specific gravity, mechanical load, electrical load, and millivolts):									
	Electrical and electronic measuring types:									
334513011G	Direct-deflecting type controllers, indicators, and recorders 17/.....	4		(S)		(D)		(S)		(D)
334513011J	Electromechanical self-balancing electric or pneumatic controllers, indicators, recorders, and integrators 17/.....	2		(S)		12,807		(S)	r/	16,331
334513021L	Digital indicators.....	16	c/	146,210	b/	44,421	c/	167,186	b/	52,267
334513021M	Transmitters producing standardized electric or pneumatic analog transmission signals.....	8	c/	39,484	b/	12,088	a/	30,691	a/r/	9,145
	Mechanical measuring types:									
334513021P	Indicating or recording controllers and recorders, noncontrol.....	4		(S)		2,587		5,684		2,724
334513021R	Indicators only.....	4		(S)		10,999		(S)	a/r/	13,049
334513021T	Transmitters producing standardized electric or pneumatic analog transmission signals.....	12		(S)		53,130		(S)	a/	62,335
	All other industrial process instruments:									
334513022A	Other temperature instruments.....	26		(X)	a/	144,106		(X)	a/r/	166,971
334513022C	Other flow and liquid level instruments.....	28		(X)	a/	229,472		(X)	r/	194,831
334513022E	Other continuous process instruments.....	32		(X)	a/	238,782		(X)	a/r/	252,956
334513022G	Other industrial type instruments.....	59		(X)	a/	352,128		(X)	a/	469,497
	Parts, supplies, accessories, other primary sensors, n.e.c., panelboards, and other equipment associated with process control instrumentation:									
334513032J	Primarily designed for temperature instruments.....	20		(X)	a/	49,170		(X)	a/	46,896
334513032L	Primarily designed for flow and liquid level instruments.....	32		(X)	b/	106,898		(X)	b/	96,661

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Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001		2000		
			Quantity	Value	Quantity	Value	
334513032N	Primarily designed for continuous process instruments.....	22	(X) c/	112,361	(X) b/		130,076
334513032P	Primarily designed for industrial-type instruments.....	33	(X) b/	71,531	(X) b/		67,631
3345141	Integrating and totalizing meters for gas and liquids.....	38	(X) a/	1,089,221	(X)		1,062,506
	Gas meters, consumption registering: Diaphragm type; positive displacements; aluminum, iron, and tin case:						
3345141001	Residential size (up to 400 cu. ft/hr of 0.64 specific gravity gas, at 0.5 inches water drop) 1/ 18/.....	5	(S)	(D)	(S)		(D)
3345141003	Other sizes, including commercial and industrial 18/.....	5	(S)	(D)	(S)		(D)
3345141005	Turbine type (all sizes).....	4	4,917	14,472	b/ 4,758	c/	12,031
3345141007	Other gas meters, consumption registering 18/.....	4	(S)	186,316	(S) r/		200,646
	Liquid meters, positive displacement with registers and counters:						
	Water meters, consumption registering:						
3345141009	Small meters, up to and including 1 inch 1/.....	8	4,603	238,493	4,547		231,474
3345141011	Intermediate meters, over 1 inch, up to and including 2 inches.....	9	154,152	42,240	160,928		42,210
3345141013	Large meters, over 2 inches.....	8	547,116	107,320	497,763		100,837
3345141015	Liquid fuel dispensing meters, excluding service station dispensing pumps 19/.....	8	(D)	(D)	(D)		(D)
3345141017	Other liquid meters; industrial bulk plants, pipeline, batching, and treatment facilities 19/.....	13	1,002,754	251,672	944,628	r/	231,037
3345141019	Parts, components, and accessories for gas and liquid meters, sold separately.....	26	(X)	248,708	(X)		244,271
3345143	Counting devices, excluding motor vehicle instruments.....	37	(X)	415,868	(X)		511,542
3345143001	Mechanical input 1/.....	9	(S)	34,917	(S) r/		38,526
3345143003	Electrical input 1/.....	11	843	49,318	913	r/	27,340
3345143005	Electronic input	12	2,067,541	101,003	b/ 2,182,488		207,867
3345143007	All other counting devices not specified above, including toll meters, fare collection equipment (systems), parking lot systems, taximeters, parking meters, etc.,	11	(X)	227,020	(X)		232,870
3345143009	Components and parts for counting devices (except parking meters), sold separately.....	7	(X)	3,610	(X)		4,939
3345145	Motor vehicle instruments.....	32	(X)	2,899,988	(X)		3,110,987
3345145001	Speedometers (speedometers including odometers, are classified as speedometers).....	10	(X)	13,360	(X)		43,261
3345145003	Tachometers.....	9	(X)	25,950	(X) r/		27,924
3345145005	Odometers (speedometers, including odometers, are classified as speedometers) 20/.....	4	(X)	(D)	(X)		(D)
3345145007	Fuel level gauges 20/.....	8	(X)	(D)	(X)		(D)
3345145009	Water temperature gauges.....	10	(X)	19,502	(X) r/		24,404
3345145011	Ammeters.....	9	(X)	3,253	(X)		5,413
3345145013	Oil pressure gauges.....	7	(X)	7,367	(X) r/		13,359
3345145015	Instrument panels, including cluster modules.....	17	(X)	2,659,285	(X)		2,790,084
3345145017	Other motor vehicle instruments 20/.....	19	(X)	171,271	(X)		206,542
3345151	Integrating instruments, electrical.....	21	(X) b/	531,197	(X)		493,185
	Ac watt-hour meters:						
3345151001	Single phase 1/.....	7	5,808	189,854	r/ 4,967	r/	198,953
3345151003	Polyphase.....	5	222,236	32,485	r/ 190,423	r/	21,572
3345151005	Demand meters (kW and kVA), combined watt-hour and demand meters (single phase and polyphase), and combined watt-hour and time switch meters.....	9	794,464	137,113	r/ 797,098	r/	147,609
3345151007	Other electrical integrating meters, including dc watt-hour meters, ampere-hour meters, and other miscellaneous integrating instruments not included in the above classifications 21/.....	10	(X) a/	119,170	(X)		(D)
3345151009	Parts and accessories for electric integrating meters, including meter mountings and registers, sold separately 21/.....	10	(X)	52,575	(X) r/		125,051
3345153	Test equipment for testing electrical, radio and communication circuits, and motors.....	331	(X) b/	10,552,276	(X)		13,981,977

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001		2000	
			Quantity	Value	Quantity	Value
	Voltage, current, and resistance measuring equipment (except multimeters):					
	Electronic:					
3345153001	Digital 22/.....	23	(X)	67,410	(X)	(D)
3345153003	Analog 22/.....	23	(X)	45,497	(X)	594,934
3345153005	Electrical, excluding panel meters.....	13	(X)	147,624	(X)	123,419
	Multimeters:					
3345153007	Electronic, digital and analog 23/.....	12	(X)	149,628	(X)	(D)
3345153009	Electrical 23/.....	6	(X) b/	23,240	(X)	154,392
	Power and energy measuring equipment:					
	Electronic:					
3345153011	Analog 24/.....	3	(X)	(D)	(X)	(D)
3345153013	Digital 24/.....	15	(X) b/	73,446	(X) a/	70,031
3345153015	Electrical power measuring equipment, excluding electrical integrating instruments, sold separately.....	4	(X)	(D)	(X)	(D)
3345153018	Frequency counters, timers, and other frequency and time measuring equipment, excluding standards.....	17	(X)	113,029	(X) r/	132,288
3345153026	Waveform measuring and/or analyzing equipment, including oscilloscopes and spectrum analyzers.....	24	(X) c/	653,015	(X)	1,022,560
	Signal generating equipment:					
3345153031	Audio.....	12	(X) a/	16,359	(X) a/	20,143
3345153033	RF (over 20 kHz to 890 MHz) 25/.....	14	(X)	97,772	(X)	(D)
3345153035	Microwave (890 MHz and above) 25/.....	9	(X)	53,365	(X)	565,857
	Field strength and intensity measuring equipment, including RFI measuring equipment:					
3345153037	Electronic 26/.....	12	(X) a/	168,886	(X)	444,909
3345153039	Electrical field measuring equipment 26/.....	4	(X)	(D)	(X)	8,069
	Impedance and standing wave ratio measuring equipment (transfer function measuring equipment):					
3345153043	Electronic impedance and related measuring equipment.....	7	(X) b/	18,195	(X) b/	18,263
3345153045	Standing wave measuring equipment (slotted lines, sliding shorts, reflectometers, and other SWR equipment).....	3	(X)	(D)	(X)	(D)
3345153047	X-Y plotters (recorders), electronic.....	1	(X)	(D)	(X)	(D)
	Automatic test and measuring equipment:					
3345153049	Combination and/or group test sets.....	39	(X)	1,869,725	(X)	1,732,345
	Component part test sets:					
3345153051	Electron tube test equipment.....	3	(X) c/	109	(X)	146
	Semiconductor component test equipment:					
3345153053	Memory.....	14	(X)	42,546	(X)	73,648
3345153055	Linear 27/.....	8	(X)	(D)	(X)	(D)
3345153057	Microprocessor.....	14	(X)	563,102	(X)	1,417,989
3345153059	Other semiconductor component test equipment 27/.....	37	(X)	1,449,934	(X)	2,226,027
3345153061	Circuit board loaded test equipment.....	14	(X) b/	330,307	(X) r/	340,801
3345153063	Other component part test sets and equipment.....	27	(X) c/	361,354	(X) c/r/	355,941
3345153065	Equipment and subassembly test equipment, n.e.c., including disc drive testers, power supply testers, etc.	17	(X) a/	167,530	(X) a/r/	151,371
3345153068	Standards and calibration equipment for test measuring equipment, including laboratory types (metered benchtop, rack mountable, or plug-in equipment).....	25	(X) a/	254,916	(X) a/	171,151
	Analyzers for testing characteristics of internal-combustion engines, excluding aircraft:					
3345153071	Portable.....	5	(X)	142,402	(X) b/	260,607
3345153073	Other.....	5	(X) a/	30,774	(X) a/r/	18,982
	Communications test equipment, n.e.c.:					
3345153075	Network analyzers.....	12	(X)	953,334	(X)	927,618
3345153077	Cable backplane and other continuity testers.....	10	(X) a/	41,175	(X) a/r/	63,432
3345153079	Fiber optics test equipment (OTDR, optical S/N meters, etc.).....	12	(X)	818,164	(X) r/	596,513
3345153081	Other communications test, monitoring, and control equipment (except microwave).....	29	(X) b/	538,156	(X) a/	835,203
3345153083	Microwave test equipment, n.e.c., (1,300 MHz and above).....	9	(X) b/	172,888	(X) c/	96,822
	Logic test, development, and analysis equipment:					
3345153085	Logic analyzers, and similar logic state, timing, and signature analyzers 28/.....	4	(X)	(D)	(X)	(D)
3345153087	Microprocessor development systems 28/.....	7	(X) a/	226,035	(X)	309,595

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Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001				2000			
			Quantity		Value		Quantity		Value	
3345153089	Pulse, function, and data generators and similar metered frequency synthesizers.....	12	(X)		198,296		(X)		220,389	
3345153091	Other field service test and measurement equipment, logic probes, clips, and pulsers 29/.....	6	(X)	c/	20,017		(X)		(D)	
3345153093	Other measuring and checking instruments for testing electrical, radio and communication circuits, and motors.....	30	(X)	a/	372,708		(X)		274,782	
3345153095	Other analyzing instruments for checking electrical quantities 29/.....	9	(X)		127,836		(X)		300,826	
3345153097	Parts and components for test equipment for testing electrical, radio and communication circuits, and motors, sold separately.....	45	(X)	a/	233,510		(X)	r/	448,533	
3345155	Instruments to measure electricity.....	80	(X)	b/	391,308		(X)	a/	439,684	
	Electrical indicating instruments:									
	Panel type instruments:									
3345155001	Digital panel meters (DPM) between 0.05 percent and 1 percent, plus or minus one-digit accuracy, excluding precision DVM's and electronic counters.....	21	b/	724,168	b/	48,806	a/	1,223,847		87,061
3345155003	Analog solid state panel meters (generally of plus or minus 2-percent accuracy) with LED, LCD, or neon gas discharge display.....	8	c/	43,785	a/	5,875	c/	37,610	a/	5,350
	Panel types other than ruggedized or sealed (generally of 2-percent accuracy):									
3345155005	Ac, including moving iron van and dynamometer types.....	8	b/	156,365	b/	3,733	c/	120,011	b/	5,283
3345155007	Dc, including rectifier and self-contained thermocouple types 1/.....	12	c/	815	b/	22,160	c/	1,042	b/	28,739
3345155009	Panel types ruggedized or sealed (generally of 2-percent accuracy) 30/.....	7	c/	55,520	b/	5,804	c/r/	56,427	b/	9,518
3345155011	Panel types with control or signal initiating means, including instrument relays 30/.....	3	(D)		(D)		(D)		(D)	
3345155013	All other panel type instruments, including ammeters and volt meters for motor vehicles 1/.....	11	a/	1,281	a/	32,039	r/	1,543	r/	33,708
	Switchboard instruments which are generally of 1-percent accuracy:									
3345155015	Ac, including moving iron vane and dynamometer types 31/.....	2	(D)		(D)		(D)		(D)	
3345155017	Dc, including rectifier and thermocouple types 31/.....	5		18,667		2,194		17,382		2,152
3345155019	Elapsed time meters (with and without reset) 1/.....	9	(S)	b/	17,275		(S)	b/	18,767	
3345155021	Portable instruments which are generally capable of accuracies within plus or minus 2-percent of full scale indication, and can be enclosed in a case so that they can be moved and used at various locations, and which are an end product.....	16		361,853		79,271	r/	411,587		88,835
	Electrical recording instruments (portable and for panel mounting):									
3345155023	Direct deflecting (direct acting), (except temperature calibrated instruments) 32/.....	1	(D)		(D)		(D)		(D)	
3345155025	Oscillographic recorders, pen or stylus, and light beam type 32/.....	3	(D)		(D)		(D)		(D)	
3345155027	Other electrical recording instruments 32/.....	23	(X)	a/	88,379		(X)	a/r/	80,983	
	Parts and accessories for indicating and recording instruments:									
3345155029	Transducers for volts, amperes, watts, vars, frequency, temperature and power factor.....	17	(X)	b/	31,480		(X)	b/	31,957	
3345155031	Tachometer generators (except aerospace types) 33/.....	2	(X)		(D)		(X)		(D)	
3345155033	Other, including instrument shunts 33/.....	13	(X)		54,292		(X)		47,331	
3345160	Analytical and scientific instruments (except optical).....	267	(X)	a/	7,547,579		(X)	a/r/	6,808,222	
	Electrochemical instruments:									
3345160001	Ph electrodes and meters.....	19	(X)	a/	82,300		(X)	r/	71,969	
3345160003	Ion selective electrodes and meters.....	12	(X)	a/	33,611		(X)	b/	36,489	
3345160007	Electrophoresis instruments.....	10	(X)	a/	127,377		(X)	a/	128,530	
3345160009	Other (except process type), including photometers.....	12	(X)	a/	14,217		(X)	a/r/	7,231	
3345160012	Chromatographic instruments, including gas, liquid, paper, gel, and thin layer.....	35		325,212		964,734	b/	327,569		1,031,170

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001			2000		
			Quantity		Value	Quantity		Value
	Spectrophotometric instruments:							
3345160017	Atomic absorption 34/.....	5	(X)		(D)	(X)		(D)
3345160019	Optical emission, including spark, arc, and glow, spectrographs, all other (except ICP).....	7	(X)	b/	7,738	(X)		25,176
3345160021	Optical emission, including laser excited source, which includes laser microprobe source emission, laser source Raman, and laser microprobe source Raman spectro-meters 34/.....	7	(X)		(D)	(X)		(D)
3345160023	Optical emission with inductively coupled plasma, ICP 34/.....	5	(X)	b/	179,689	(X)		168,063
3345160025	Infrared, including Fourier transfer methods.....	13	(X)	a/	125,668	(X)	r/	115,674
3345160027	Ultraviolet, visible and colorimeters.....	20	(X)	a/	151,543	(X)	r/	136,230
3345160029	Fluorescent instruments, including fluorometers (except chemicals).....	14	(X)		57,266	(X)		52,993
3345160031	Color measuring devices.....	10	(X)		169,111	(X)	r/	182,288
3345160033	Other, including vacuum ultraviolet, Raman, light scattering reflectors, helium glow, and light measuring.....	13	(X)		45,513	(X)		23,456
3345160035	Thermal analysis instruments, including thermogravimetric analyzers (TGA), quantitative thermal analyzers (QTA) and differential thermal analyzers (DTA).....	12	(X)	a/	118,799	(X)	r/	150,794
3345160037	Nuclear magnetic resonance spectrometers, including electron paramagnetic spin types (EP) 35/.....	2	(D)		(D)	(D)		(D)
3345160039	Microscopes, scanning type, including electron and proton 35/.....	4	(D)		(D)	(D)		(D)
3345160041	Particle beam excitation instruments, including electron microprobes, augers, energy ion spectroscopes, secondary ion mass spectro-meters (SIMS), and ion microprobes 35/.....	3	(D)		(D)	(D)		(D)
3345160043	Photon excitation analyzers, including: X-ray fluorescence, simultaneous; X-ray fluorescence, sequential; X-ray fluorescence, sequential with diffraction; X-ray fluorescence, diffraction; X-ray diffraction; and energy dispersive systems (EDSS).....	9	c/	1,658	a/	61,650	a/r/	2,321
3345160045	Mass spectroscopy instrumentation.....	15	(X)		328,089	(X)	r/	70,311
	Clinical laboratory instrumentation, including instruments used in the clinical laboratory for measuring, analyzing, and processing clinical specimens.....	(NA)	(X)		1,319,263	(X)	r/	300,071
3345160047	Chemistry (measure and identify substances, e.g., metabolites, enzymes, and drugs).....	11	(S)		564,145	(S)	r/	1,257,646
3345160049	Hematology (measure and identify substances or cells contained in blood or substances influencing the development and clotting of blood, e.g., cell counting coagulation factors).....	11		21,850	329,533	19,590		489,651
3345160051	Microbiology (enumerate or identify pathogenic organisms or measure their susceptibility to antimicrobial agents).....	7	(S)		57,019	(S)	r/	318,418
3345160053	Histology (process tissue and cells, e.g., tissue processors, cell stainers) 36/.....	2	(D)		(D)	(D)		29,628
3345160055	Blood bank and immunology (process blood and specimens for testing; measure and identify, using immunoassay, substances in clinical specimens) 36/.....	9	(S)	a/	232,453	(S)	r/	(D)
3345160057	Other clinical laboratory instrumentation not specified above.....	15	a/	44,151	136,113	c/	20,006	a/
3345160059	Organic elemental analysis instruments, including carbon, hydrogen, nitrogen, oxygen, and sulphur.....	13	c/	43,089	a/	88,858	r/	43,889
3345160061	Amino acid, protein and/or peptide, including chromatographic type 35/.....	5	(D)		(D)	(D)		89,212
3345160063	Gas detectors.....	20		403,926	111,433	r/	458,481	(D)
3345160065	Other analytical and scientific instruments, n.e.c., including molecular weight, mono-chrometers (analytical type), nephelometers (except meteorological), osmometers, particle size analyzers, photo multipliers, surface area analyzers, turbidometers, and breatholyzers 35/.....	96	(X)	a/	2,365,984	(X)	r/	118,047
								1,532,878

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001			2000		
			Quantity		Value	Quantity		Value
3345160067	Parts, components, and accessories for analytical and scientific instruments, sold separately, including photo tubes, thermal conductivity sensors, thermopiles, etc.	106	(X)	a/	1,194,736	(X)	a/	1,309,994
3333141	Sighting, tracking, and fire control equipment, optical type.....	38	(X)	a/	521,034	(X)	a/r/	432,540
3333141001	Made from lenses, prisms, etc., produced in the same plant.....	8	(X)		163,032	(X)		118,082
3333141003	Made from purchased lenses, prisms, etc.	21	(X)	b/	330,248	(X)	b/r/	271,424
3333141005	Parts and accessories.....	14	(X)	b/	27,754	(X)	r/	43,034
3333143	Optical instruments and lenses.....	155	(X)	a/	2,251,264	(X)		2,698,506
3333143111	Binoculars, prismatic and nonprismatic, terrestrial and celestial telescopes.....	13	(X)	c/	82,890	(X)		99,184
3333143113	Other astronomical instruments, excluding radio astronomy 37/.....	5	(X)		(D)	(X)		(D)
3333143115	Parts and accessories, including mountings for binoculars, optical telescopes and other astronomical equipment.....	13	(X)	c/	40,045	(X)	b/r/	24,461
3333143231	Optical test and inspection equipment, including standard sources, modulators, optical comparators, and interferometers (except optical microscopes).....	37	(X)		242,424	(X)		279,232
3333143233	Optical microscopes.....	13	(X)	a/	47,293	(X)	a/r/	67,965
3333143235	Optical components: Filters, including parts and accessories thereof.....	29	(X)		134,984	(X)	r/	177,479
3333143237	Lenses (except ophthalmic focus lenses): Unmounted lenses.....	38	(X)	a/	251,028	(X)	a/	310,282
3333143242	Mounted lenses, including photographic.....	17	(X)		251,310	(X)		231,146
3333143243	Other (prisms, mirrors, etc.).....	49	(X)		261,162	(X)	r/	264,841
3333143245	Other optical instruments, including optical alignment and display instruments; excluding analytical instruments and binoculars and astronomical instruments listed above, and sighting and fire control equipment.....	41	(X)	a/	682,228	(X)	a/r/	722,646
3333143247	Parts and accessories for other optical microscopes 37/.....	13	(X)		(D)	(X)		(D)
3333143249	Parts and accessories for other optical instruments 37/.....	18	(X)		257,900	(X)		521,270
3345191	Aircraft engine instruments (except flight).....	38	(X)		889,285	(X)	r/	818,661
3345191001	Temperature sensors, transmitters, and displays.....	24	(X)		239,488	(X)		206,241
3345191003	Pressure ratio sensors, displays, and controls.....	6	(X)		9,945	(X)	r/	11,347
3345191005	Pressure and vacuum sensors, transmitters, and displays.....	11	(X)		70,360	(X)	r/	54,821
3345191007	Fuel and oil flow rate sensors, transmitters, and displays, including mixture controls.....	6	(X)		27,586	(X)	r/	37,936
3345191009	Fuel and oil quantity sensors, transmitters, and displays, including densitometers 38/.....	7	(X)		(D)	(X)		(D)
3345191011	Tachometer generators and indicators.....	8	(X)		7,588	(X)		7,688
3345191013	All other not specified above.....	11	(X)		163,452	(X)	a/r/	199,387
3345191015	Parts and components for aircraft engine instruments (except flight), sold separately 38/.....	12	(X)		370,866	(X)	r/	301,241
3345193	Physical properties testing and inspection equipment and kinematic testing and measuring equipment.....	160	(X)	a/	1,660,438	(X)	a/r/	1,845,257
3345193001	Physical properties testing equipment, including hardness, tensile, stress, strain, abrasion, strength, torsion, wear, and similar testing equipment; including components and parts, sold separately: For testing of metals.....	26	(X)	a/	467,589	(X)	r/	464,731
3345193003	Other.....	44	(X)	a/	352,229	(X)	r/	420,888
3345193005	Parts for physical properties testing equipment, sold separately.....	28	(X)	a/	80,588	(X)	c/	77,505
3345193007	Physical properties inspection equipment, including flaw detection, thickness measuring, and similar inspection equipment; including components and parts, sold separately: For testing of metals.....	23	(X)		179,915	(X)	a/	207,347
3345193009	Measuring and checking flow of fluids.....	12	(X)		68,501	(X)		73,350
3345193011	Other.....	40	(X)	a/	247,403	(X)	a/	316,874
3345193013	Parts for physical properties inspection equipment, sold separately 39/.....	22	(X)		(D)	(X)		(D)

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001				2000			
			Quantity		Value		Quantity		Value	
3345193015	Kinematic testing and measuring equipment, including vibration, acceleration, and other motion testing equipment.....	31		(X)		210,619		(X)		220,701
3345193017	Parts for kinematic testing and measuring equipment, sold separately 39/.....	7		(X)	c/	53,594		(X)		63,861
3345195	Nuclear radiation detection and monitoring instruments.....	48		(X)	a/	544,122		(X)	a/	568,163
3345195001	Radiation detecting elements, including ion chambers.....	14	b/	88,956	a/	65,927	b/	108,289	a/	59,467
3345195003	Solid state detectors 40/.....	6		(D)		(D)		(D)		(D)
3345195005	Nuclear monitoring instruments, including environmental, personal dosimetry, and medical monitors, both stationary and portable types.....	15		(S)	a/	175,748		(S)	b/	176,290
3345195007	Sample and flow counting systems, manual and automatic.....	6		(X)	a/	15,759		(X)	a/	22,655
3345195009	Scalers.....	6		(S)		891		(S)		956
3345195011	Special amplifiers for nuclear applications 41/.....	3		(D)		(D)		(D)		(D)
3345195013	Pulse analyzers, including nuclear spectrometers: Single channel pulse height analyzers 41/.....	3		(D)		(D)		(D)		(D)
3345195015	Multichannel pulse height analyzers.....	4	a/	452	a/	3,800	a/r/	544	a/r/	4,230
3345195017	Count rate meters 41/.....	8		(D)		(D)		(D)		(D)
3345195019	Measurement and control devices using beta, gamma, or neutron gauge technology.....	10		(X)		81,621		(X)		89,122
3345195021	Nuclear power supplies.....	6		(X)		15,755		(X)		11,332
3345195023	Neutron and photon activation analysis systems 41/.....	4		(X)		9,863		(X)	r/	8,772
3345195025	Nuclear instrument modules, n.e.c.	10		(X)		31,430		(X)	r/	37,204
3345195027	Other nuclear radiation detection and monitoring instruments 40/.....	13		(X)		92,802		(X)		105,014
3345195029	Parts and components for nuclear radiation detection and monitoring instruments, sold separately.....	16		(X)		50,526		(X)	r/	53,121
3345197	Commercial, geophysical, meteorological, and general-purpose instruments	146		(X)	a/	1,177,021		(X)	r/	1,203,633
3345197001	Barometers and barographs, aneroid and mercurial types, including recorders, wall pendant, meteorological, hygro-thermographs, barometer-thermometer-humidity combinations.....	13		(X)		2,573		(X)		3,680
3345197003	Hydrometers, glass, all types, including thermo-hydrometers 1/.....	4		(S)	b/	916	c/	177	a/	1,603
3345197005	Liquid-in-glass thermometers: Engraved (etched) stem, thermoregulators, deep-sea reversing, laboratory, encased glass, ASTM standards, pocket case, max-min registering (except clinical thermometers).....	11		(X)	b/	4,846		(X)	a/	4,976
3345197007	Threaded and flanged types, fixed and adjustable angle, inline and duct installations, for process, food, air-conditioning, and refrigeration installations 1/.....	10	c/	463	c/	7,732	c/	597	c/	10,307
3345197009	Household and commercial thermometers such as wall, outdoor, domestic science, cupcase, filled systems, and indoor-outdoor 1/.....	10		2,864		6,534		3,333		7,953
3345197011	Bimetal thermometers: Threaded and flanged types, for pipeline and duct installations, including general and pocket test 1/.....	13		1,361		21,927	b/	1,002		21,764
3345197013	Domestic science, commercial general tests, indoor, outdoor, desk models, oven, refrigerator 1/.....	9		(S)		11,113		(S)		14,591
3345197015	Humidity indicating and recording instruments such as bi-hygroscopic and hygroscopic element, indicators, psychrometers, wet and dry bulb, hygographs, and indicating hygrometers.....	19		(X)		11,648		(X)	r/	11,864
3345197017	Other thermometers (infrared, meteorological, commercial, and industrial).....	18		(X)	c/	62,067		(X)	a/	172,581
3345197023	Meteorological electronics equipment and radio astronomy equipment (automatic weather stations and weather tracking equipment, ceilometers, transitometers, space satellite meteorological systems, and specialized meteorological telemetering equipment).....	20		(X)		229,192		(X)	r/	208,248

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2001		2000	
			Quantity	Value	Quantity	Value
3345197025	Other meteorological instruments, including speed and direction instruments, rain gauges, thermographs, and parts, sold separately.....	18	(X) b/	33,087	(X) b/	30,836
3345197027	Seismic instruments.....	10	(X)	204,700	(X) r/	141,401
3345197029	All other geophysical instruments and equipment.....	20	(X)	111,471	(X) r/	102,529
3345197031	Other commercial and industrial instruments (except aircraft), including compasses, altimeters, test equipment for hydraulic and pneumatic systems and controls, and environmental gas detectors, sold separately.....	40	(X)	435,082	(X)	436,486
3345197033	Parts and accessories for meteorological and commercial and industrial instruments.....	22	(X) a/	34,133	(X) b/r/	34,814
3345199	Surveying and drafting instruments and associated equipment.....	29	(X) a/	276,273	(X) a/	331,650
3345199001	Surveying instruments, including alidades, transits, plumb bobs, sextants, theodolites, surveyors, compasses, surveyor's levels, tapes, etc.	18	(X)	232,266	(X) a/	286,608
3345199003	Parts and components for surveying instruments, sold separately.....	5	(X)	(D)	(X)	(D)
3345199005	Drafting instruments and machines, manual and automatic, drafting tables, plotting instruments, slide rules, T-squares, drafting templates, rules, etc.	11	(X) c/	17,475	(X) c/	21,034
3345199007	Parts and components for drafting instruments and machines, sold separately.....	2	(X)	(D)	(X)	(D)
3345199009	Photogrammetric and geodetic equipment, excluding cameras.....	1	(X)	(D)	(X)	(D)
3345199011	Parts and components for photogrammetric and geodetic equipment, sold separately.....	1	(X)	(D)	(X)	(D)

- Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not specified by kind.
r/Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

- 1/The quantity for this product code is in thousands of units.
- 2/Product code 332911F022 is combined with product code 332911F025 to avoid disclosing data for individual companies.
- 3/Product code 332911H005 is combined with product code 332911H007 to avoid disclosing data for individual companies.
- 4/Product code 3345111109 is combined with product code 3345111111 to avoid disclosing data for individual companies.
- 5/For 2001, product code 3345111217 is combined with product code 3345111219 to avoid disclosing data for individual companies.
- 6/Product codes 3345111221 and 3345111223 are combined with product code 3345111225 to avoid disclosing data for individual companies.
- 7/Product code 3345113209 is combined with product code 3345113211 to avoid disclosing data for individual companies.
- 8/Product codes 3345113655, 3345113657, and 3345113659 are combined with product code 3345113667 to avoid disclosing data for individual companies.
- 9/Product code 3391110121 is combined with product code 3391110123 to avoid disclosing data for individual companies.
- 10/Product codes 3391110127 and 3391110145 are combined with product code 3391110151 to avoid disclosing data for individual companies.
- 11/Product code 3391110231 is combined with product code 3391110233 to avoid disclosing data for individual companies.
- 12/Product codes 3345120107 and 3345120109 are combined with product code 3345120111 to avoid disclosing data for individual companies.
- 13/Product code 3345120115 is combined with product code 3345120117 to avoid disclosing data for individual companies.
- 14/Product codes 3345130113, 3345130116 and 3345130121 are combined to avoid disclosing data for individual companies.
- 15/Product code 3345130229 is combined with product code 3345130231 to avoid disclosing data for individual companies.
- 16/Product code 3345130261 is combined with product code 3345130263 to avoid disclosing data for individual companies.
- 17/Product code 334513011G is combined with product code 334513011J to avoid disclosing data for individual companies.
- 18/Product codes 3345141001 and 3345141003 are combined with product code 3345141007 to avoid disclosing data for individual companies.
- 19/Product code 3345141015 is combined with product code 3345141017 to avoid disclosing data for individual companies.
- 20/Product codes 3345145005 and 3345145007 are combined with product code 3345145017 to avoid disclosing data for individual companies.
- 21/For 2000, product code 3345151007 is combined with product code 3345151009 to avoid disclosing data for individual companies.
- 22/For 2000, product code 3345153001 is combined with product code 3345153003 to avoid disclosing data for individual companies.
- 23/For 2000, product code 3345153007 is combined with product code 3345153009 to avoid disclosing data for individual companies.
- 24/Product code 3345153011 is combined with product code 3345153013 to avoid disclosing data for individual companies.
- 25/For 2000, product code 3345153033 is combined with product code 3345153035 to avoid disclosing data for individual companies.
- 26/For 2001, product code 3345153037 is combined with product code 3345153039 to avoid disclosing data for individual companies.
- 27/Product code 3345153055 is combined with product code 3345153059 to avoid disclosing data for individual companies.
- 28/Product code 3345153085 is combined with product code 3345153087 to avoid disclosing data for individual companies.
- 29/For 2000, product code 3345153091 is combined with product code 3345153095 to avoid disclosing data for individual companies.
- 30/Product code 3345155009 is combined with product code 3345155011 to avoid disclosing data for individual companies.
- 31/Product code 3345155015 is combined with product code 3345155017 to avoid disclosing data for individual companies.
- 32/Product codes 3345155023 and 3345155025 are combined with product code 3345155027 to avoid disclosing data for individual companies.
- 33/Product code 3345155031 is combined with product code 3345155033 to avoid disclosing data for individual companies.

Table 2. Quantity and Value of Shipments of Selected Instruments and Related Products: 2001 and 2000
[Quantity in number of units. Value in thousands of dollars]

34/Product codes 3345160017 and 3345160021 are combined with product code 3345160023 to avoid disclosing data for individual companies.

35/Product codes 3345160037, 3345160039, 3345160041, and 3345160061 are combined with product code 3345160065 to avoid disclosing data for individual companies.

36/Product code 3345160053 is combined with product code 3345160055 to avoid disclosing data for individual companies.

37/Product codes 3333143113 and 3333143247 are combined with product code 3333143249 to avoid disclosing data for individual companies.

38/Product code 3345191009 is combined with product code 3345191015 to avoid disclosing data for individual companies.

39/Product code 3345193013 is combined with product code 3345193017 to avoid disclosing data for individual companies.

40/Product code 3345195003 is combined with product code 3345195027 to avoid disclosing data for individual companies.

41/Product codes 3345195011, 3345195013, and 3345195017 are combined with product code 3345195023 to avoid disclosing data for individual companies.

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 3. Shipments, Exports and Imports of Selected Instruments and Related Products: 2001
[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption (value) 2/ 3/
332911F001, 003, 005, 007, 009, 011, 013	Pneumatic actuated automatic valves.....	664,141	67,190	40,533
332911F015, 017, 022, 025, 027, 029	All other control valves including electric and electrohydraulic.....	469,534	575,650	518,836
332911F031, 033, 035, 037, 039, 041	Self-generating power actuated regulator valves.....	982,830	180,084	497,605
332911H001, 003, 005, 007, 009	Solenoid-operated valves (except nuclear and fluid transfer).....	443,836	164,616	512,235
3345111101	Compasses (magnetic and gyroscopic).....	418,413	70,158	30,085
3345111103, 105, 107, 109, 111, 113, 115, 217, 219, 221, 223, 225, 227, 229, 231, 233, 335, 437 3345113101, 103, 105	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments) 4/.....	5,295,651	950,811	437,195
3345113207, 209, 211, 313, 315, 317, 319, 321, 323	Radar systems and equipment 5/.....	4,329,660	609,862	75,206
3345113651	Radio navigational aid receivers and displays.....	746,584	416,700	581,831
3345113665	Automatic pilots.....	(D)	311,865	22,752
3345113425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 545, 547, 549, 653, 655, 657, 659, 661, 663, 667, 669, 671, 673	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuys, navigation, sonar fish finders, sonar range instrumentation, and other).....	18,624,933	111,210	129,887
3345120102, 225	Temperature responsive automatic controls (thermostats).....	621,955	143,603	356,384
3345120105, 107, 109, 111, 113, 115, 117, 219, 223, 227	Pressure responsive automatic, hydraulic automatic, pneumatic automatic, and automatic control, n.e.c.	1,522,538	1,487,105	1,355,959
3345120229	Parts and components for automatic controls, sold separately.....	144,548	643,279	456,538
3345130	Process control instruments.....	6,765,890	616,861	680,624
3345141001, 003, 005, 007	Gas meters, consumption registering (except parts).....	200,788	27,707	11,838
3345141009, 011, 013, 015, 017	Liquid meters (except parts).....	639,725	65,554	5,914
3345141019	Parts, components, and accessories for gas and liquid meters, sold separately.....	248,708	59,113	116,979
3345143001, 003, 005, 007 3345145, 3345191, 3345155	Counting devices, n.e.c., including taximeters and parts, parking meters and parts, aircraft engine and motor vehicle instruments.....	4,592,839	441,042	1,048,204
3345151	Electricity meters.....	531,197	85,858	61,885
3345153001, 003, 005	Voltage, current, and resistance measuring equipment (except multimeters).....	260,531	232,539	130,951
3345153011, 013, 015	Power and energy testing equipment 6/.....	73,446	322,883	117,229
3345153071, 073	Analyzers for testing characteristics of internal-combustion engines (except aircraft).....	173,176	232,011	91,883
3345153031, 033, 035	Signal generating equipment.....	167,496	115,695	36,465

Continued

Table 3. Shipments, Exports and Imports of Selected Instruments and Related Products: 2001
[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption (value) 2/ 3/
3345153007, 009, 018, 026, 037, 039, 043, 045, 047, 049, 051, 053, 055, 057, 059, 061, 063, 065, 068, 075, 077, 079, 081, 083, 085, 087, 089, 093	Test equipment for testing multimeters, electrical, radio and communication circuits, and motors, n.e.c.	9,490,191	2,199,073	773,049
3391110, 3345160	Laboratory, analytical, and scientific instruments	9,935,961	1,987,194	1,195,193
3333141	Sighting, tracking, and fire control equipment, optical type.....	521,034	23,296	75,358
3333143111, 113, 115	Binoculars and astronomical instruments and parts and accessories 7/.....	122,935	102,463	267,284
3333143231, 235, 237, 242, 243, 245, 247, 249	Optical instruments and lenses, n.e.c. 8/.....	2,081,036	1,539,479	253,204
3333143233	Microscopes, optical.....	47,293	56,925	245,753
3345193	Physical properties testing and inspection equipment and kinematic testing and measuring equipment	1,660,438	569,103	87,321
3345195	Nuclear radiation detection and monitoring instruments and equipment.....	544,122	331,593	46,619
3345197005, 007, 009	Liquid-in-glass thermometers, n.e.c.	19,112	8,176	25,793
3345197011, 013, 017	Thermometers (except liquid-in-glass type).....	95,107	17,728	206,885
3345197029	Geophysical instruments and equipment.....	111,471	214,836	97,277
3345197027	Seismic instruments.....	204,700	10,001	9,789
3345197001, 015, 023, 025	Commercial, geophysical, meteorological, and general-purpose instruments, n.e.c.	276,500	200,962	242,578
3345199001, 003	Surveying instruments (except photogrammetrical and geodetic equipment).....	(D)	64,739	131,752
3345199005	Drafting instruments and machines, manual and automatic.....	17,475	86,524	30,397

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified.

1/Source: Census Bureau report, EM 545, "U.S. Exports."

2/Source: Census Bureau report, IM 145, "U.S. Imports for Consumption."

3/Value represents the c.i.f. (cost, insurance, and freight) value at first port of entry in the United States plus import duties.

4/Product code 3345113105 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.

5/Product codes 3345113313 and 3345113315 are excluded from manufacturers' shipments to avoid disclosing data for individual companies.

6/Product code 3345153015 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.

7/Product code 3333143113 is excluded from manufacturers' shipments to avoid disclosing data for individual companies.

8/Product code 3333143113 is included with manufacturers' shipments to avoid disclosing data for individual companies.

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2001

Product code	Product description	Export code 1/	Import code 2/
332911F001, 003, 005, 007, 009, 011, 013	Pneumatic actuated automatic valves.....	8481.80.9035	8481.80.9035
332911F015, 017, 022, 025, 027, 029	All other control valves, including electric and electrohydraulic.....	8481.80.9020 8481.80.9030 8481.80.9045 8481.80.9050	8481.80.9020 8481.80.9030 8481.80.9045 8481.80.9050
332911F031, 033, 035, 037, 039, 041	Self-generating power actuated regulator valves.....	8481.80.9015	8481.80.9015
332911H001, 003, 005, 007, 009	Solenoid-operated valves (except nuclear and fluid transfer).....	8481.80.9005	8481.80.9005
3345111101	Compasses (magnetic and gyroscopic).....	9014.10.1040 9014.10.1080 9014.10.6040 9014.10.6080 9014.10.7040 9014.10.7080 9014.10.9040 9014.10.9080	9014.10.1000 9014.10.6000 9014.10.7030 9014.10.7060 9014.10.9000
3345111103, 105, 107, 109, 111, 113, 115, 217, 219, 221, 223, 225, 227, 229, 231, 233, 335, 437 3345113101, 103, 105	Search, detection, aeronautical, nautical, and navigational and guidance systems, equipment, and instruments, n.e.c. (except aircraft engine instruments).....	9014.20.2000 9014.20.6000 9014.20.8040 9014.20.8080 9014.90.0000	9014.20.2000 9014.20.6000 9014.20.8040 9014.20.8080 9014.90.2040 9014.90.2080 9014.90.6000 9014.80.1000
3345113207, 209, 211, 313, 315, 317, 319, 321, 323	Radar systems and equipment.....	8526.10.0010 8526.10.0020 8526.10.0070	8526.10.0020 8526.10.0040
3345113651	Radio navigational aid receivers and displays.....	8526.91.0010 8526.91.0030 8526.91.0070	8526.91.0020 8526.91.0040
3345113665	Automatic pilots.....	9014.20.4000 9014.90.0000	9014.20.4000 9014.90.1000
3345113425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 545, 547, 549, 653, 655, 657, 659, 661, 663, 667, 669, 671 673	Sonar search, detection, tracking, and communication systems and equipment, including ASW (sonar telephone, communication equipment, depth finding, fire control, fusing guidance, hydrophones, mapping, sonabuys, navigation, sonar fish finders, sonar range instrumentation, and other).....	9014.80.2000 9014.80.6000	9014.80.2000 9014.80.4000 9014.80.5000
3345120102, 225	Temperature responsive automatic controls (thermostats).....	9032.10.0000	9032.10.0030 9032.10.0060 9032.10.0090
3345120105, 107, 109, 111, 113, 115, 117, 219, 223, 227	Pressure responsive automatic, hydraulic automatic, pneumatic automatic, and automatic controls, n.e.c.	9032.20.0000 9032.81.0080 9032.89.6020 9032.89.6085	9032.20.0000 9032.81.0080 9032.89.6015 9032.89.6025 9032.89.6085

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2001

Product code	Product description	Export code 1/	Import code 2/
3345120229	Parts and components for automatic controls, sold separately.....	9032.90.0000	9032.90.2000 9032.90.4000 9032.90.6020 9032.90.6040 9032.90.6060 9032.90.6080
3345130	Process control instruments.....	9032.81.0040 9032.81.0080 9032.89.6030 9032.89.6040 9032.89.6050 9032.89.6060 9032.89.6070 9032.89.6075	9032.81.0020 9032.81.0060 9032.89.6030 9032.89.6040 9032.89.6050 9032.89.6060 9032.89.6070 9032.89.6075
3345141001, 003, 005, 007	Gas meters, consumption registering (except parts)	9028.10.0000	9028.10.0000
3345141009, 011, 013, 015, 017	Liquid meters (except parts).....	9028.20.0000	9028.20.0000
3345141019	Parts, components, and accessories for gas and liquid meters, sold separately.....	9028.90.0080	9028.90.0080
3345143001, 003, 005, 007 3345145 3345191 3345155	Counting devices, n.e.c., including taximeters and parts, parking meters and parts, and motor vehicle instruments.....	9106.20.0000 9028.90.0040 9029.10.0000 9029.20.4040 9029.20.5000 9029.90.0000	9106.20.0000 9029.10.4000 9028.90.0040 9029.10.8000 9029.20.4040 9029.20.4080 9029.90.2000 9029.90.8040 9029.90.8080
3345151	Electricity meters.....	9028.30.0000	9028.30.0000
3345153001, 003, 005	Voltage, current, and resistance measuring equipment (except multimeters).....	9030.39.0040	9030.39.0040
3345153011, 013, 015	Power and energy testing equipment.....	9030.39.0080	9030.39.0080
3345153071, 073	Analyzers for testing characteristics of internal-combustion engines (except aircraft).....	9031.80.8060 9031.80.8070	9031.80.8060 9031.80.8070
3345153031, 033, 035	Signal generating equipment.....	8543.20.0000	8543.20.0000
3345153007, 009, 018, 026, 037, 039, 043, 045, 047, 049, 051, 053, 055, 057, 059, 061, 063, 065, 068, 075, 077, 079, 081, 083, 085, 087, 089 093	Test equipment for testing multimeters, electrical, radio and communication circuits, and motors, n.e.c.	9029.20.6000 9030.31.0000 9030.82.0000 9030.20.0000 9030.90.8010 9030.90.8020 9030.90.8030 9030.90.8040 9030.90.8050 9030.90.8060	9029.20.6000 9030.31.0000 9030.82.0000 9030.90.4500 9030.90.8400 9030.90.8810 9030.90.8820 9030.90.8830 9030.90.8840 9030.90.8855 9030.90.8860
3391110, 3345160	Laboratory, analytical, and scientific instruments.....	9027.50.5000 9027.50.2000 9027.20.2000 9027.20.6050 9027.20.5030	9027.20.5030 9027.20.5050 9027.20.5060 9027.20.5080 9027.20.8030

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2001

Product code	Product description	Export code 1/	Import code 2/
	Laboratory, analytical, and scientific instruments (continued).....	9027.20.9000	9027.20.8060
		9027.30.4040	9027.20.8090
		9027.30.4080	9027.30.4040
		9027.80.2000	9027.30.4080
		9027.80.3100	9027.50.4015
		9027.80.3200	9027.50.4020
		9027.80.3500	9027.80.4520
		9027.80.8000	9027.80.4530
		9027.90.2000	9027.80.4560
		9012.10.0000	9027.80.4590
			9027.90.8400
			9027.90.8800
			9012.10.0000
			9027.80.8030
			9027.80.8060
			9027.80.8090
3333141	Sighting, tracking, and fire control equipment, optical type.....	9013.10.2000	9013.10.1000
		9013.10.4000	9013.10.3000
			9013.10.4000
3333143111, 113, 115	Binoculars and astronomical instruments and parts and accessories.....	9005.10.0020	9005.10.0020
		9005.10.0040	9005.10.0040
		9005.10.0080	9005.10.0080
		9005.80.4020	9005.80.4020
		9005.80.4040	9005.80.4040
		9005.80.6000	9005.80.6000
		9005.90.0000	9005.90.4000
			9005.90.8000
3333143231, 235, 237, 242, 243, 245, 247, 249	Optical instruments and lenses, n.e.c.	9031.41.0000	9031.41.0020
		9031.90.0000	9031.41.0040
			9031.41.0060
			9031.90.4500
			9031.90.5400
			9031.90.5800
3333143233	Microscopes, optical.....	9011.10.0000	9011.10.4000
		9011.20.0000	9011.10.8000
		9011.80.0000	9011.20.4000
		9011.90.0000	9011.20.8000
			9011.80.0000
			9011.90.0000
3345193	Physical properties testing and inspection equipment and kinematic testing and measuring equipment.....	9024.10.0000	9024.10.0000
		9024.80.0000	9024.80.0000
		9024.90.0000	9024.90.0040
			9024.90.0080
3345195	Nuclear radiation detection and monitoring instruments and equipment.....	9030.10.0000	9030.10.0000
		9030.90.4000	
3345197005, 007, 009	Liquid-in-glass thermometers, n.e.c.....	9025.11.4000	9025.11.4000
3345197011, 013, 017	Thermometers (except liquid-in-glass type).....	9025.19.4000	9025.19.8040
		9025.19.8040	9025.19.8080
3345197029	Geophysical instruments and equipment.....	9015.80.8040	9015.80.8040
3345197027	Seismic instruments.....	9015.80.6000	9015.80.6000
3345197001, 015, 023, 025	Commercial, geophysical, meteorological, and general purpose instruments, n.e.c.	9025.80.1500	9025.80.1500
		9025.80.5050	9025.20.8000
		9015.80.8080	9025.80.1000

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2001

Product code	Product description	Export code 1/	Import code 2/
	Commercial, geophysical, meteorological, and general purpose instruments, n.e.c. (continued).....	9025.90.0000	9025.80.2000 9025.80.3500 9025.80.4000 9025.80.5000 9025.90.0000 9015.80.8080
3345199001, 003	Surveying instruments (except photogrammetrical and geodetic equipment).....	9015.10.0000 9015.20.0000 9015.30.0000	9015.10.4000 9015.10.8000 9015.20.4000 9015.20.8000 9015.30.4000 9015.30.8000 9015.90.0010 9015.90.0020 9015.90.0030
3345199005	Drafting instruments and machines, manual and automatic.....	9017.10.0000 9017.20.4000 9017.20.8060	9017.10.4000 9017.10.8000 9017.20.4000 9017.20.7000 9017.20.8080

n.e.c. Not elsewhere classified.

1/Source: 2001 edition, Harmonized System-Based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2001).

Appendix.

General CIR Survey Information, Explanation of General Terms and Historical Note

GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

- 21 Mining
- 22 Utilities
- 23 Construction
- 31-33 Manufacturing
- 42 Wholesale Trade
- 44-45 Retail Trade
- 48-49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing
- 54 Professional, Scientific, and Technical Services
- 55 Management of Companies and Enterprises
- 56 Administrative and Support and Waste Management and Remediation Services
- 61 Educational Services
- 62 Health Care and Social Assistance
- 71 Arts, Entertainment, and Recreation
- 72 Accommodation and Food Services
- 81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

EXPLANATION OF GENERAL TERMS

Capacity. The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

Consumption. Materials used in producing or processing a product or otherwise removing the product from the inventory.

Exports. Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

Gross shipments. The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

Interplant transfers. Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

Inventories. The quantity or value of finished goods, work in progress, and materials on hand.

Machinery in place. The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

Net receipts. Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

Production. The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

Quantities produced and consumed. Quantities of each type of product produced by a company for internal consumption within that same company.

Quantity and value of new orders. The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

Quantity and value of shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and

returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Stocks. Total quantity of ending finished inventory.

Unfilled orders (backlog). Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

HISTORICAL NOTE

Data on selected instruments and related products have been collected by the Census Bureau since 1961. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.